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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/824,337	04/13/2004	Tatsuhiko Sato	37904-0054	5386

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EXAMINER

NGUYEN, PHU HOANG

ART UNIT	PAPER NUMBER
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1791

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/824,337	Applicant(s) SATO, TATSUHIRO	
	Examiner PHU H. NGUYEN	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 8, 9, 12, 15-17, 20-22, 25 and 26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8-9, 12, 15-17, 20-22 and 25-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Acknowledgement is made of Amendment received 4/10/2008. Claims 6-7, 13-14, 18-19 and 23-24 are canceled. Claims 1-5, 8-9, 12, 15-17, 20-22 and 25-26 are currently amended.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 8, 12, 15,17, 20, 22 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art in view of Butterbaugh et al. (U.S Patent No. 6124211) and further in view of Honma et. al (JP 07183240). The applicant's admitted prior art teaches a method for producing a quartz glass jig used in a semiconductor industry, quartz glass raw material is made into a desired shape by a flame process or the like, subjected to a strain-removing annealing or the like and then washed to give a product (line 14-16 under Prior Art of this instant application's specification). The applicant's admitted prior art method does not teach subsequent steps of gas phase etching and gas phase purification on a surface layer of the quartz glass jig that will remove impurities. Honma also discloses a process that supplies halogen content gas to a furnace under predetermined processing conditions to purify quartz glass (claim 1 of JP 07183240). Honma further discloses the purification process

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by using hydrogen chloride gas at a furnace temperature of 1150 degree C (second to last sentence of the Constitution) that is within the temperature range of from 800 degree C to 1300 degree C of the instant claims 7, 14, 19 and 24. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform the gas phase purification step with a temperature range of from 800 degree C to 1300 degree C in a gaseous atmosphere containing Cl. Butterbaugh discloses gas phase etching of silicon material and contaminant films on a surface (column 1, lines 9-17) such as HF vapor etching process (column 1, line 57-64). Butterbaugh discloses an etching gas containing a fluorine compound such as ClF_3 is introduced into process chamber to produce a gaseous environment in which the fluorine containing gas forms a substantial partial pressure over the substrate (column 6, lines 39-49) that are overlapping with the group consisting of C_xF_y , Cl_xF_y , N_xF_y , Si_xF_y , S_xF_y (where, $10 \geq x \geq 1$ and $10 \geq y \geq 1$), CHF_3 , HF and F_2 .

Regarding claim 1, it would have been obvious to one of ordinary skill in the art at the time the invention was made to produce a glass jig with reduced metal impurity by a method comprising preparation of quartz glass raw material, flame process, stress removal annealing process, gas phase etching step, gas phase purification step and washing as taught by the combination of applicant's admitted prior art, Butterbaugh et al. (U.S Patent No. 6124211) and Honma et al. (JP 07183240).

Regarding claim 2, gas phase etching and gas phase purification steps are both gas phase steps that etches silicon and removes remaining metal impurity respectively.

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Since these two steps essentially remove different material that made up the surface of the quartz glass, they can be carried out simultaneously to save processing time.

Regarding claim 3, annealing is a heat treating step where a quartz glass is heat up to a temperature and hold then ramp down so that the surface and internal of the glass can start to cool down at temperature below strain point to remove permanent stress. Honma discloses the purification process by using hydrogen chloride gas at a furnace temperature of 1150 degree C (second to last sentence of the Constitution). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to reduce furnace operating costs by carry out gas phase etching and gas phase purification during the annealing step.

Regarding claim 4, it would be obvious to one of ordinary skill in the art at the time the invention was made to carry out gas phase etching and gas phase purification steps of claim 3 simultaneously to save processing time.

Regarding claims 5, 12, 17 and 22, Butterbaugh discloses etching quartz glass using etching gas containing fluorine can be carried out at a temperature below 300 degree C (column 7, lines 17-25) overlapping with the temperature range of 0 degree C to 1300 degree C of the instant claims 5, 12, 17 and 22.

Regarding claim 8, 15, 20, and 25, Honma discloses that hydrogen chloride gas was used as raw gas, if it is halogen content gas, it can be used similarly. Furthermore, Honma defines halogen simple substance gas and halogenated compound gas are contained in halogen content gas (last two sentences of paragraph 17 under Detailed

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Description). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a gaseous atmosphere containing Cl is HCl, Cl₂ or a combination of HCl, Cl₂ since they are both halogen content gas as taught by Honma.

Claims 9, 16, 21 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art, Butterbaugh et al. (U.S Patent No. 6124211) and Honma et. al (JP 07183240) as applied to claims 5,12,17 and 22 above and further in view of Hays (U.S Patent No. 3511727). The combination of applicant's admitted prior art, Butterbaugh and Honma does not disclose hydrogen gas as carrier-diluent. Hays discloses inert gases other than hydrogen, such as nitrogen and argon, may be employed as a carrier and diluent. However, the use of carrier-diluents other than hydrogen are not recommended since a preferential attack of certain semiconductor crystal planes may result, thereby producing a rough surface as opposed to the mirror finishes (line 30-37, column 3). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to include hydrogen in the gaseous atmosphere containing F as a carrier-diluent to achieve mirror finishes.

Double Patenting

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Applicant is advised that should claim 21 be found allowable, claim 26 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Response to Arguments

Applicant's arguments filed 4/10/2008 have been fully considered but they are not persuasive.

Applicant essentially argues that Butterbaugh teaches completely removed of silicon oxide in the etching process therefore one of skill in the art would therefore not consider application of Butterbaugh to a process for treating an article of quartz glass. However, since Butterbaugh teaches gas phase etching with HF on silicon oxide one of ordinary skill in the art would look for Butterbaugh as a solution when etching silicon dioxide. Furthermore, it is noticed that the claimed invention recites a gas phase etching step without any ranges of the depth for etching.

Applicant also argues that Butterbaugh teaches away from the conventional gas phase etching with HF because it is not a preferred method. Although gas phase etching with HF is not a preferred method of Butterbaugh, Butterbaugh discloses this

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well known process. Therefore, one of ordinary skill in the art at the time the invention was made would know about the well known etching solution for silicon oxides by gas phase etching process with HF.

Applicant further argues that Honma teaches away from applying the purification process using hydrogen chloride gas to an assembled jig since it uses the treatment for disassembled parts. However, the teaching of purification process can be applied to disassembled parts of a jig suggest that one of ordinary skill in the art would consult this solution when searching for a purification; furthermore since the purification process can be applied to disassembled parts it would be likely to be able to applied to the same parts in assembled form.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu H. Nguyen whose telephone number is 571-272-5931. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Philip Tucker can be reached on 571-272-1095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

P.N 7/21/2008

/Philip C Tucker/

Supervisory Patent Examiner, Art Unit 1791